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ABSTRACT

This report summarizes the literature published on the use of the General Educational Development (GED) Tests to measure readiness for postsecondary education. It identifies 73 studies on GED holders' success in postsecondary education, recent national surveys of GED holders and examinees, and surveys of postsecondary institutions. Chapters I and II provide a history of the GED tests as well as GED testing norms. Chapter III presents information from Wisconsin research. Research on GED holders' success in postsecondary education is summarized in chapter IV. Chapter V briefly highlights recent national surveys of GED holders and examinees, while chapter VI summarizes the few surveys of postsecondary institutions. This survey shows that few studies have examined the performance of GED holders in postsecondary education in the last decade and that most of the existing studies involved very small numbers of GED holders. A seven-page list of references is appended. (YLB)

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LITERATURE SURVEY OF THE USE OF THE GED TO MEASURE READINESS FOR POST-SECONDARY EDUCATION

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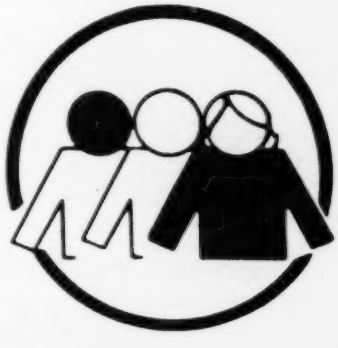

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LITERATURE SURVEY OF THE USE OF THE GED TO MEASURE READINESS FOR POST-SECONDARY EDUCATION

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INTRODUCTION

In Wisconsin the State Superintendent of Public Instruction may "grant declarations of equivalency of high school graduation to persons, if in the state superintendent's judgment they have presented satisfactory evidence of having completed a recognized high school course of study or its equivalent." (Wisconsin statutes 115.29 (4)) The equivalency certificate provides one opportunity by which an adult who did not complete high school may earn a high school credential. High school courses offered by VTAE districts are also available to the high school non-completer.

In 1980 the U.S. Census Bureau estimated that 822,000 adults in Wisconsin ages 25 years and older had not completed high school. These non-completers made up 30.4% of all Wisconsin adults ages 25 and older.

1980 WISCONSIN POPULATION: AGED 25 YEARS AND OLDER

EDUCATIONAL ATTAINMENT	Estimated Number of Persons	Percent of Total	Cummulative Percent
8 yr. or less of grade school	486,000	18.0%	18.0%
1-3 yr. of high school	336,000	12.4	30.4
4 yr. of high school	1,093,000	40.4	70.8
1-3 yr. of college	389,000	14.4	85.2
4 or more yr. of college	401,000	14.8	100.0
TOTAL	2,075,000	100.0%	

Source: U.S. Bureau of the Census, 1980 cited by National Center for Education Statistics, 1983.

This series of studies on the GED credential and its use in Wisconsin was conducted as part of the state's commitment to providing quality educational programs and opportunities for persons of all ages and all educational backgrounds. We wish to thank Dr. Herbert J. Grover, State Superintendent of Public Instruction, for his support of the GED studies. The Graduate School of the University of Wisconsin-Milwaukee provided research assistants who made valuable contributions to these studies.

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I. HISTORY OF THE GED TESTS

The Tests of General Educational Development (GED Tests) were developed in 1942 by the United States Armed Forces Institute (USAFI). The USAFI commissioned a group of civilian testing experts who worked with an advisory committee established in cooperation with the American Council on Education, the National Association of Secondary School Principals, and regional accrediting associations.

One of the test authors, Dr. Everet F. Lindquist, described the need for this new test battery:

> Among the many post-war problems facing American colleges and universities there is perhaps none which our formal pre-war procedures and facilities are less adequate to handle and none which presents greater administrative complexities and differences than the problem of evaluating the in-service educational experiences of the war veteran and of determining his appropriate educational placement when he returns to school. (Linquist, 1944, p. 357)

The USAFI GED Tests were designed to allow military personnel to continue their education as civilians without having to return to the high school classroom. The credential could be presented to educational institutions and employers who required high school graduation standards.

Several features were built into the test battery to facilitate their use across the country. Multiple choice questions were used exclusively so that the tests could be administered and scored by people with minimal training. National norms were developed so that test results would be comparable around the country.

The exams were made as short as possible and simple in organization so that the results could be easily understood and interpreted. The tests were also designed to measure the long-term outcomes of high school rather than specific facts learned in the classroom. As Linquist reported,

> ...the tests should be of such character that they would not penalize the serviceman unfairly because of his lack of recent academic or classroom experience, or because of the "unorthodox" or informal manner in which his education had been acquired. This meant to us immediately that these tests could not be the usual final achievement examinations for high school or college courses....The real ends of instruction are the lasting concepts, attitudes, skills, abilities, and havits of thought, and the improved judgements of sense of values acquired; the detailed materials of instruction, the specific factual content, are to a large extent only a means towards these ends. Since the detailed materials out of which a self-educated serviceman might have developed his generalized concepts, attitudes and ways of thinking might differ considerably in content and organization from those used in formal classroom instruction, we felt that we must try to measure as directly as possible the ultimate outcomes of a general education, and to minimize as much as possible the formal pedagogical procedures that may be used to attain them in classroom instruction. (Linquist, 1944, pp. 365-366)

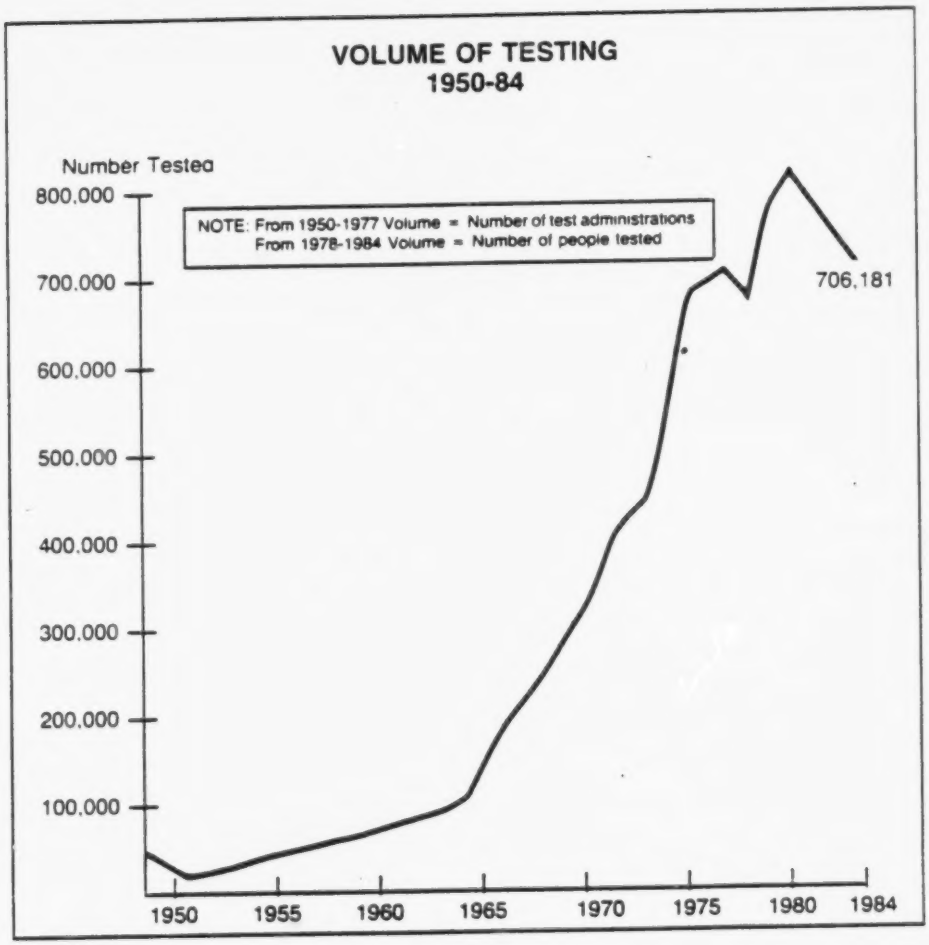
The Veterans Testing Service administered the GED Tests in the years following World War II. In 1947 non-veterans were allowed to take the GED Tests for the first time. By 1959 the number of non-veteran adults tested exceeded the number of veterans. In recognition of this change, in 1963 the Veterans Testing Service was renamed the General Educational Development Testing Service.

The emergence of state and federal supported adult education programs led to a tremendous growth in the number of non-veteran adult participants in the GED testing program in the 1960's.

In 1965 the U.S. Congress provided funds for the establishment of adult basic education (ABE) programs to help persons 18 years of age and older with less than a grade school level of education. In 1966 the age limit for enrollment in ABE programs was dropped to 16 years of age.

Today the GED testing program is a joint program of the GED Testing Service (GEDTS) and each state department of education. Each state program is operated in accordance with rules of the GEDTS's Commission on Educational Credit and Credentials. Each state establishes its own minimum test score(s), the minimum age of GED candidates, and any other necessary qualifications for earning a high school credential based on the results from the GED Tests. However, the minimum test score requirements cannot be less stringent than the Commission's minimum score requirement.

The GED Tests are used in all fifty states and most Canadian provinces. In 1984, 706,181 people took the GED exams. About three-fourths of the examinees earned scores that qualified them for an equivalency certificate. Over the years the age of examinees has dropped. By 1984, 31% of the examinees were 19 years of age or younger, while about 10% were 40 or older. (1984 GED Statistical Report)



Source: 1984 GED Statistical Report, p. 3.

The GED tests use a multiple choice format (5 choices for each question) for each of five subject areas: writing skills, social studies, science, reading skills, and mathematics. The stated purpose of the GED Tests is "to enable persons who have not graduated from high school to demonstrate the attainment of developed abilities normally acquired through completion of a high school program of study." (1984 Examiner's Manual)

In 1982 the GED Testing Service began a five-year program to review and, if necessary, revise the specifications for the GED Tests. Surveys of Commission members, advisory committee members and GED administrators showed strong endorsement for the statement

that "The GED testing program should be primarily directed toward providing an opportunity for individuals to earn a high school credential." The clear second choice, particularly for adult education teachers and local adult education directors, was using the GED for a job-oriented goal. (Spille, Memorandum #30, 1984)

The Commission on Educational Credit and Credentials recommends that colleges and universities follow the procedures listed below in admitting GED holders:

(1) Unless current admissions policies for high school diploma holders require a graduating class rank above the 30th percentile, equivalency credential holders should be admitted if they met the state equivalency credential requirement based on GED Test results.

(2) If a higher class rank is normally required of diploma holders, the information in Table 1 can be used to set an appropriate minimum level for the GED average score of equivalency credential recipients. (For example, if diploma recipients are required to rank in the upper half of their graduating classes, a minimum GED average score of 50 may be an appropriate, comparable standard for equivalency credential holders.) In such cases, because of the retesting limitations on the GED Tests, it is suggested that alternate means (e.g. SAT, ACT, CLEP, local exams, interviews) be available for satisfying this requirement.

(3) Where local validity studies confirm the appropriateness of GED minimum score requirements above those set for state equivalency credential, it is suggested that alternate means (e.g. SAT, ACT, CLEP, local exams, interviews) be available to enable GED candidates to satisfy admissions requirements.

Because the GED Tests reflect only a selection of general educational skills, and do not address subject matter mastery in specific course and disciplinary areas, institutions are advised that special local testing and counseling may be necessary to ensure suitable placement into English and Mathematics courses. (Spill, Memorandum #23, 1982)

II. GED TESTING NORMS

Norms for the first test battery were established in 1943 based on a testing sample of 35,330 graduating seniors in 814 high schools in the United States. The test sample, which was drawn proportionately from every state in the Union, made it possible to establish separate norms for different sections of the country. The national norms recommended a standard which 80% of the high school test sample successfully met. In May-June, 1955 the tests were administered to a new sample of 38,773 graduating seniors selected from 634 schools. The tests were renormed again in 1967. In each case scores on test forms developed for use during the period between the "national norming" studies were equated with those used in the most recent prior study. (1984 GED Examiner's Manual)

In 1974 the Educational Testing Service was granted the contract for developing new forms of the GED examinations. The new test battery was shortened from the "old" power-test form (where a study could take all the time he or she needed to complete the tests) to a six-hour timed test. The "new", shorter test editions, developed with updated content, were normed in 1977 with a group of 3,500 representative high school seniors. A separate study of about 300 adult GED candidates was conducted to assure the appropriateness of the new tests for that group. (Duncan, 1982) In 1980 new norms were established after testing about 3,600 graduating seniors attending 304 high schools throughout the United States. Because the 1980 norm group earned slightly lower scores than the 1977 norm group, GED candidates could answer fewer questions correctly to meet the minimum-required standard scores. Wisconsin's present standard score requirements of a minimum score of 35 and a total score of at least 225 was met by 69% of the U.S. high school seniors in the 1980 norming group. (1984 GED Examiner's Manual)

Standard scores are based on national norming studies. However, performance may vary widely by individual states in the norming group. In 1955 the state (unnamed) with the highest GED sample group test scores had only 20% of its tested seniors in the lowest 30th percentile, while the state with the poorest scores had 48%, or nearly half, of its students in the lowest group. (Bloom, 1957)

In 1981 the state of Oregon tested 1,025 graduating seniors selected to represent the state's high school population. Their research showed that while 69% of the 1980 U.S. norming sample could meet Oregon's GED requirements (minimum score of 40 on each subtest and minimum total of 225), 88% of the Oregon high school seniors could meet that standard. (Duncan, 1982)

U.S. AND OREGON NORMING STUDIES FOR GED CERTIFICATION: 1980 and 1981

	PERCENTILE RANK	
Minimum Requirements for GED Certification[1]	U.S. High School Senior in 1980 Norming Study	Oregon High School Seniors Tested in 1981
45 each subtest	49%	68%
45 each subtest or 250 total	55	72
40 each subtest and 225 total	67	82
35 each subtest and 225 total#	79	86
225 total	70	86
40 each subtest##	69	88
40 each subtest or 250 total	70	88
40 each subtest or 225 total	73	90

[1]A score requirement of "45 each subtest OR 250 total" requires the candidate to either score a minimum of 45 on each subtest or to score a total of 250 (50 average on each test). A requirement of "40 each subtest AND 225 total" requires a candidate to both each 40 on each of the 5 subtests and to earn a 225 total.

#This is the present Wisconsin standard.

##This is the Oregon standard.

The provinces of Canada receive separate norming information on Canadian students based on a Spring, 1980 sample of 800 twelfth graders from nine provinces and territories. These students outperformed GED national samples for the United States. For example, while 74% of the seniors tested in Canada could score at least 45 on each test, only 69% of the U.S. seniors could do as well. (Saskatchewan Continuing Education Department, 1982c; Spille, Memorandum #23, 1982)

The GED Testing Service could not provide norms for Wisconsin because they did not consider the schools sampled to be necessarily representative of the state as a whole. Regional norms were provided for an "east north central state" region consisting of Illinois, Indiana, Michigan, Ohio, West Virginia (?), and Wisconsin. In these six states the GED Testing Service reported that 3,550 students were tested in 60 schools. These seniors scored only slightly above the national sample as a whole. (Malizio, correspondence, 1986)

COMPARISON OF EAST NORTH
CENTRAL REGION HIGH SCHOOL SENIORS TO
1980 U.S. HIGH SCHOOL SENIORS

(Based on High School Norms Effective January 1, 1982)

		EAST NORTH CENTRAL REGION HIGH SCHOOLS[1]				
Standard Score	U.S. High School Seniors PR	Writing Skills PR	Social Studies PR	Science PR	Reading Skills PR	Math PR
80	99	99	99	99	99	99
75	99	99	99	99	99	99
70	98	97	97	98	98	97
65	93	93	94	93	93	92
60	84	82	83	84	85	82
55	69	68	66	66	68	65
50	50	49	46	46	46	48
45	31	29	27	27	28	29
40	16	14	13	14	14	14
35	7	6	5	6	6	5
30	2	2	1	2	2	1
25	1	1	1	1	1	1
20	1	1	1	1	1	1
MEAN	50	50.49	50.84	50.76	50.56	50.87
SD	10	9.96	9.49	9.80	9.71	9.98
N		1311	1243	1269	1321	1238
MEDIAN	50	50	51	51	51	51

NOTE:
Percentile ranks (PR) for graduating high school seniors are based on single test performance. The percentile rank of a standard score indicates the approximate percentage of persons scoring at or below that standard score.

1 Based on comparing approximately 3,550 students tested in 60 schools in the east north central region (IL, IN, MI, OH, WV, WI) to all U.S. high school seniors tested.

Source: Malizio, correspondence, 1986.

STANDARD SCORES CORRESPONDING TO SELECTED PERCENTILE RANKS

Percentile Rank	U.S. HS Seniors	EAST NORTH CENTRAL REGION HIGH SCHOOLS				
		Writing Skills	Social Studies	Science	Reading Skills	Math
99	73	74	73	73	73	76
95	67	67	67	67	67	67
90	63	64	63	63	63	63
80	59	59	59	59	58	59
75	57	57	57	58	57	57
70	56	56	56	56	55	56
60	53	53	53	54	53	54
50	50	50	51	51	51	51
40	48	47	48	49	48	48
30	44	45	46	46	46	45
25	43	44	44	44	44	44
20	41	42	43	42	43	42
10	37	38	39	38	38	38
5	27	34	35	35	34	35
1	20	27	29	26	26	29

NOTE:
Percentile ranks for graduating high school seniors are based on single test performance. Approximately 70% of the seniors in the east north central region scored above 45 on the writing skills test.

1
Based on comparing approximately 3,550 students tested in 60 schools in the east north central region (IL, IN, MI, OH, WV, WI) to all U.S. high school seniors tested.

Source: Malizio, correspondence, 1986

III. WISCONSIN RESEARCH

In 1978 John Larsen, director of the Office of Undergraduate Admission at the University of Wisconsin at Stevens Point, conducted a study of GED holders enrolled at Univeristy of Wisconsin-Stevens Point. Larsen examined the records of the 33 GED holders who first enrolled during the four semesters of the 1976-77 and 1977-78 academic year. Data was hand-collected from university historical files and official transcripts. Larsen drew the following generalizations from this study:

1...(a) A relatively high percentage of the students experienced total academic failure by the end of the first semester in attendance (40%). Those who were suspended did not tend to apply for immediate readmission.

(b) Those who achieved a first semester grade point ratio of 2.00 or better tended to continue, and to maintain a cumulative grade point ratio close to 2.00, (and) many higher than 2.00.

(c) When group characteristics were considered (according to date of original enrollment), the average number of high school semesters each student had completed increased from August 1976 to January 1978. The average first semester grade point ratio increased with each successive group also; however, there did not appear to be a strong positive correlation between the number of high school semesters completed and first semester grade point ratios when analyzed individually.

(d) The most significant conclusion for this report appears in Table VI. It appears that a score of 235 (total GED score) was a dividing line in the measurement of academic success during the important first semester for the students admitted under this program. This data would lend initial support to a revision in Admissions policy in terms of the minimum acceptable GED score for full-time enrollment.

2. It is not known whether any students in these groups were assigned specific advisors, as are students admitted under the lower quarter special admission program, nor is it known what special services, if any, were used by the students considered in this study (eg., PRIDE, Writing Lab, Reading and Study Skills Lab, tutoring services).

3. More significant conclusions may appear following a more lengthy study of the groups of students who have entered since 1976 on the basis of their GED scores. The sample is small and the time span quite short for this study. (Larsen, 1978, p. 13)

The University of Wisconsin at Green Bay examined the fall, 1981 grade point averages of their conditional matriculants, including GED holders. They found that recent as well as older high school graduates enrolled even though they did not meet Green Bay admissions standards (top 50% of class) outperformed the 28 GED holders enrolled that semester. (Van de Ven, 1985)

University of Wisconsin at Green Bay: Fall, 1981

	New	Transfer + Adv. Standing	Continuing	All Students
Recent high school grads (class of 1980 + 1981):				
Number	117	6	6	129
Average GPA	2.16	2.49	2.55	2.18
Older high school grads (classes of 1950-1979):				
Number	34	17	31	82
Avg. GPA	2.33	2.11	2.26	2.26
GED holders:				
Number	18	3	7	28
Avg. GPA	1.70	2.80	1.98	1.88

For comparison, the average freshman GPA was 2.52 and the average GPA for the total student body was 2.86.
Source: Van de Ven, 1985

Van de Ven observed,

> We feel many GED holders do not have the range of skills needed for college level work. Too often passing the GED is equated by students as possessing the same skills as a student completing a full four years of high school. There are usually significant gaps in ability and preparedness.

Admissions staff at the University of Wisconsin at Oshkosh examined records of 22 GED holders who applied for admission. Thirteen were enrolled--three fulltime and ten parttime. The majority earned below a C average (2.00). Two GED holders earned 3.0 or higher, 3 earned from 2.0 to 2.5, 7 earned below 2.0, and 1 withdrew. They found no relationship between GED scores and grades earned. (Usrhan, 1985)

Marvin Ketterling investigated the reading levels of students taking the GED test battery at the Milwaukee Area Technical College. In 1971 a representative sample of 80 individuals were asked to take the Nelson-Denny Reading Tests prior to one of their GED testing sessions. In 1977 Ketterling tested a second group of 103 GED examinees. Ketterling found that the examinee who possessed at least the vocaulary and reading comprehension skills of an average high school sophomore (10th grade) had an excellent chance of passing the five GED tests. Adults with less than a 7th grade reading level appeared to have almost no chance of achieving a minimum passing score (using Wisconsin's standard requiring a minimum score of 35 on each of the 5 subtests and a total score of at least 225). With average 8th or 9th grade reading skills the possibility of passing the GED was decided above chance occurence. (Ketterling, 1971, 1977)

GED EXAMINEES' PERFORMANCE BY TESTED READING LEVEL: 1971

Tested Reading Grade Level	Number of Students Who: Failed GED	Passed GED	Percent of Students Passing GED
11th and above	--	50	100%
10th grade	2	3	60
9th grade	1	8	89
8th grade	2	5	71
7th grade	8	--	0
6th grade	1	--	0
TOTAL	14	66	83%

GED EXAMINEES' PERFORMANCE ON THE GED SUB-TESTS BY READING LEVEL: 1971

Tested Reading Grade Level	GED STANDARD SCORE INTERVALS (Average on 5 Tests): 35-39	40-44	45-49	50-54	55-59	60-64
11th and above	--	--	6	20	18	6
10th grade	--	2	2	1	--	--
9th grade	--	1	6	2	--	--
8th grade	--	2	5	--	--	--
7th grade	2	6	--	--	--	--
6th grade	1	--	--	--	--	--

Source: Ketterling, 1971

GED EXAMINEES' PERFORMANCE BY TESTED READING LEVEL: 1977

Tested Reading Grade Level	NUMBER OF STUDENTS WHO: Failed GED	Passed GED	Percent of Students Passing the GED
12th grade and above	--	27	100%
11th grade	1	6	86
10th grade*	--	8	100
9th grade	8	10	56
8th grade	11	12	56
7th grade	7	4	36
6th grade	9	--	0
TOTAL	36	67	65%

*The success rate for those GED examinees having at least a 10th grade reading level is 97 percent.

SOURCE: Ketterling, 1977.

Ketterling was also involved in a study of time limits for the GED Tests. Since its inception in 1943, the GED Test battery was designed to be a power test. The test battery was designed to be completed in about 6 hours, but students were allowed adequate time to finish any of the test sections. However, since 1978 the American Council on Education has imposed specific time limits for each of the tests.

GED Sub-Tests	1978 Time Limits
Writing Skills	60 minutes
Social Studies	90 "
Science	90 "
Reading Skills	60 "
Mathematics	60 "

Administrators of the GED Tests in Wisconsin objected to the time limits because they felt that older examinees, unaccustomed to school, would be penalized. As a result, Wisconsin conducted a GED Timing Study in 1980. As part of that study, 295 examinees at the Milwaukee Area Technical College were given the opportunity

PERCENT OF EXAMINEES PASSING UNDER TIMED AND UNTIMED CONDITIONS

GED Sub-Test Given	Number of Students Tested	Number of Students Requiring More Time	PERCENT OF STUDENTS PASSING UNDER: TIMED CONDITIONS Standard Score 35	40	45	UNTIMED CONDITIONS Standard Score 35	40	45
Writing Skills	78	50	70%	42%	26%	91%	76%	47%
Social Studies	67	15	97	79	61	97	82	67
Science	55	12	98	93	75	100	98	80
Reading Skills	55	16	96	89	69	98	93	75
Mathematics	40	30		73	40	93	83	68

Source: Ketterling, 1980.

to continue working on their GED Tests (using a different color pen) after the new time limits. The MATC study found that most of the candidates had ample time to complete the social studies, science and reading skills tests. However, the time limit for writing skills and the math test was not sufficient for the majority of examinees. The older candidates tended to need more time to complete the writing skills tests. Younger and older candidates required about the same amount of additional time to finish the math test. Overall the percentage of students passing the writing test with a 45 standard score, rose from 26% to 47% when the time limits were listed. The percentage of students passing the math test with a 45 standard score, rose from 40% to 68% when no time limits were imposed. (Ketterling, 1980)

In June, 1981 the GED Testing Service announced new time limits for the GED writing and math tests, 75 minutes and 90 minutes respectively. No norming studies were conducted for high school seniors to determine the effects these changes would have on standard scores. The GED Testing Service has indicated that such studies will be conducted in establishing norms for the 1988 version of the GED Tests. (Spille, Memorandum #13, 1981)

Two Wisconsin studies identified by the GED Testing Service but not available through that office were not located:

Baker, John Jr. An Evaluation of the Effectiveness of the High School Equivalency Program in Preparing Participants to Pursue Higher Education Studies Successfully. unpublished doctoral dissertation, University of Wisconsin, 1972.

Soderberg, P.B. Goal Achievement Following Successful Completion of the General Educational Development Test. unpublished master's thesis, Wisconsin State University (?), 1970.

IV. RESEARCH ON GED HOLDERS' SUCCESS IN POSTSECONDARY EDUCATION

Studies conducted in the 1940's and 1950's validated the use of the General Educational Development (GED) Tests for college admissions by veterans. Dressel and Schmid (1950) reviewed 89 research studies, reports and articles on the GED for the American Council on Education. They also used raw data from four universities to conduct original research on students admitted with the GED. Their research suggested that many GED students were able to successfully complete their first years of college. Dressel and Schmid reported that those colleges requiring total GED scores of at least 275 generally found that GED holders performed satisfactorily. Colleges using lower scores often complained about heavy failure and dropout rates. Dressel and Schmid also found that most evidence suggested that GED admissions as a group were not quite as successful in college as were regular high school graduates. They suggested several reasons why GED candidates did not succeed as well. First, completion of high school may in itself demonstrate a measure of persistence and drive needed for success in college. Secondly, they argued that GI benefits removed financial barriers (which they felt traditionally discriminated against lower income students who have less success) and "attracted some persons with no real interest in education."

While noting that the GED tests were never designed for that purpose, Dressel and Schmid looked at the use of GED tests for prediction of college success. They found that the social science test was one of the best predictors of college success (as measured by students' total grade point averages).

There has been substantial interest in comparing the success of GED holders to that of traditional high school graduates and high school non-completers. In 1950 Roeber reported on his study

of 71 veterans enrolled at Kansas State Teachers College. Roeber compared the first semester performance of the veterans (who were accepted based on a total GED test score of at least 225) with the performance of 397 high school graduates. While the veterans had only reached an educational level approximating the 9th grade and many felt inferior to the high school graduates, over 50% maintained a C average and the distribution of their grades was similar to the performance of the high school graduates. The GED veterans earned lower grade point averages for the first semester, but the college admissions committee found their achievement to be at a level sufficient to merit continued use of the GED as a criterion for college admission.

After World War II the University of Utah allowed students who had high school deficiencies to enter on probation. Andrew (1951a, 1951b, 1952) reviewed the school records of male students accepted without high school diplomas. He found a correlation between GED test scores (particularly for the math test) and first semester grades, but the level of predictability was low.

Tyler, one of the authors of the GED tests, conducted a study for the American Council on Education in 1956, reviewing existing research studies and conducting additional research on the success of students admitted to institutions of higher learning on the basis of the GED tests. He found that a large number of students admitted to college on the basis of GED Tests succeeded reasonably well academically. He reported that,

> There is sufficient evidence from all of the available studies to justify the continued use of the GED tests as one criterion for admission to college in lieu of the requirement of a high school diploma. Institutions should be encouraged to carry on studies in their local situations to discover factors which should be considered along with the results of the GED tests to identify students who should be advised to enter. (Tyler, 1956, p. 31)

Tyler examined whether higher critical scores on the GED tests would have appreciably improved the success of the GED groups. He looked at college grades for 2,050 GED students at 11 colleges. Fifty-four percent of the students had grade point averages below a "C". Tyler found that if a minimum total GED score of 275 had been required instead of the minimum of 225, then 703 of the 1,098 failures would have been eliminated (64% of all failures), along with 249 of the successful students (26% of all successful students).

Tyler reported that the lack of preparation in specific academic subjects was most noticeable for GED students in math and natural science. He observed that,

> Many colleges have remarked that GED students have been handicapped by lack of sound training in mathematics and the natural sciences. It may be added, parenthetically, that regular high school graduates also have experienced considerable difficulty with these subjects. In cases where certain college courses (like engineering) require special training, the study suggests that applicants be required to complete special preparation before being allowed to enroll in them. (Tyler, 1956, p. 29)

D'Amico (1953, 1957) examined the academic records of 307 male veterans accepted at Indiana University between 1946 and 1950. The veterans were accepted on the basis of GED scores totaling at least 225. D'Amico found that GED students with GED test scores below 250 did not make good scholastic records at the school. (Students with scores above 275 made slightly above average scholastic records.) When compared with a group of 307 male high school graduates, the GED students earned fewer college degrees. (30% of the high school graduates completed college; 25% of the GED students completed.) Among both groups he found that older students (25 years and above) had better grade point averages.

Baird (1960) examined the records of 150 GED holders who had graduated from East Tennessee State University. The study found no significant differences when college achievement was compared to age, years of high school completed, years in military service, or high school units in math, science, history or English.

Pipho (1967) identified high college dropout rates for students admitted to college on the basis of the GED. Pipho studied 279 GED holders who were admitted to five Colorado colleges between 1958 and 1962. The average GED score for his group was 263. He found that the success of these GED holders was limited. His survey of 279 GED students revealed that 53 (19%) graduated, 218 (78%) dropped out of school, and 8 (2%) were still enrolled in 1964. 41% of the students dropping out of college had low grade point averages.

Fugate (1972) studied all GED holders admitted to Middle Tennessee State University between 1945 and 1966. During that period the university admitted veterans with 12 months of service and non-veterans at least 18 years old who had GED scores totaling 225. (High school graduates were accepted if they had a "C" average in academic subjects.) The 490 GED holders in the study made up 2.5% of the total student body at MTSU during those years. Most of the GED holders were older (the median age was 24.15 years) and male (445 out of the 490 total, or 91%). Enrollments of GED holders were highest after World War II and relatively low during the years of the Korean War. Fugate found that students above the median age (24.15 years) graduated in higher numbers. Twenty-nine percent of the older students graduated, compared with 24% of the students below the median age. Only 13% of the older students were placed on probation or suspended, while 36% of the students below the median age were placed on probation or suspended. Students who graduated from MTSU had a mean GED total score of 271.5, while students placed

on probation or suspended had a mean GED total score of 259.5. (The mean GED total test score for all 490 students was 267.5.) Fugate also found that the small group of women GED holders in his study (45 of the total) had higher rates of graduation (47%, compared to 23% for the men), fewer suspensions or probationary status (2%, compared to 26% for the men), and better grade point averages (2.81, compared to 1.79).

Russo (1969) studied all freshmen and sophomore fulltime students who were high school equivalency holders enrolled for the fall term of the 1968-69 school year in three Arizona junior colleges. His purpose was to identify variables which predict the academic achievement of recipients of a high school equivalency certificate. He found that veterans achieve better than non-veterans, those above the median age do better than those below the median age; and students who are married do better than those who are not married.

In 1972 Sharon compared GED test scores and cumulative grade point averages (for two-year periods) for students with GED certificates enrolled in forty colleges and universities across the country. Sharon found that the academic achievement of GED holders was only slightly but insignificantly lower than that of regular high school graduates. He concluded that GED tests are useful and appropriate for admission of non-graduates to college and indicated that they could be used to predict success in college. The use of test scores for prediction in two-year schools was better than that for four-year institutions, indicating to Sharon that the GED may provide a better measure of abilities necessary for success in initial college courses than for higher level courses. Like Tyler (1956), Sharon (1972a) reported difficulties experienced by high school equivalency holders in math courses taken at the college level.

In 1972 Roon reported his examination of student records at the Metropolitan State College in Denver for a seven-year period. The study showed that regular high school graduates in the top 30% of their class maintained the highest grade point averages, while GED students had the lowest overall GPA. However, Roon found that when all students with grade point averages below 2.00 ("C") were eliminated, a comparison of the remaining grade point averages revealed no significant difference between high school graduates and GED holders.

Hannah (1972) studied three Alabama junior colleges. The study found no significant differences in GPA's at the end of the first year of attendance between high school graduates and GED holders. At the end of the second year, the GPAs of the GED holders were higher.

Topp (1972) examined the records of 64 GED holders admitted fulltime for the 1970-71 fall semester at the College of South Utah, Eastern New Mexico University, and Northern Arizona University. He found that GED holders had most success in first semester grades who were veterans, married or over 28 years old. He found that ACT test scores were better predictors (R= .389 to .232) than GED scores (R= .234 to .073) for first semester grades.

Byrd et al (1973) compared 30 students at Wilkes Community College to 50 high school graduates at the school. High school diploma and GED recipients compared equally on the school's reading placement tests and in grade point averages in English and math. The data suggested that both groups needed skill reinforcement at the same level.

Age appeared as a major factor in a study by Murphy (1973) which compared the performance of 40 high school graduates and 46 GED holders accepted in a hospital-based licensed practical nursing program from 1960 through 1972. There were no significant differences

In the students' scores on the state license exam or their ratings by supervisory staff. However, the GED holders were an average of 10 years older than the high school graduates and were enrolled in the earlier years of the program. A higher percentage of high school graduates dropped out of the program (39%, compared to 22% for GED students). The author concluded that GED students were a very good risk for admission and that the younger age of the high school graduate was a factor in their leaving the program.

Moore (1973) examined academic records of 220 GED holders admitted to five junior colleges in the fall of 1971. He compared these students to 220 high school graduates matched by age, sex and ethnicity. GED holders were far less successful in college as measured by grades, credits earned and retention rates. Moore found that GED holders were five times more likely to drop out their first semester than the high school graduate group. Sixty-three percent of the GED holders had grades below "C" (2.00), compared to 36% of the high school graduate group. GED holders completed an average of 16 semester hours (out of 23 attempted), while high school graduates completed 23 hours (out of 27 attempted).

Roy (1975) looked at the experiences of 204 equivalency-holders at Bristol Community College attending between 1969 and 1973. Ninety-four percent of these students' grades in introductory courses were "C" or better. He found that students who withdrew were not necessarily failing. Of the 48 students who had withdrawn, 83% had a "C" average or better at the time of withdrawal. A follow-up survey identified main reasons for withdrawal before completing an associate degree program as financial problems (27% of the total), illness (24%), and transfer to a four-year college (22%).

Negative findings toward performance of GED holders in college were reported by Rogers (1977). Rogers examined the first semester

college performance of 170 students who had earned GED certificates and were attending a midwestern college. He found that although the average GED test scores totaled 251, these students' mean grade point average was 1.71 (1.00 = D), compared to 2.11 for high school graduates. 59% of the GED students performed at or below the D grade level (1.99 or less). 81% of the GED students completed two or more semesters of college, earning an average cumulative GPA of 1.96. Rogers concluded that GED students will experience difficulties in their first semester regardless of age or GED test score levels. He asserted that GED tests do not predict academic success, that GED and the high school diploma are not equivalent, and that other factors (e.g. past grades, IQ, motivation, and self-concept) are more important for college success and should be considered at the time of admissions. Rogers concluded that,

> GED persons must be made aware of the fact that college is tough and that their chances of success are diminished because they did not experience both the tangibles and the intangibles of a high school education.

Four studies in the late 1970's and early 1980's looked at the academic success of GED holders. C.V. Ayers (1978) compared the grade point averages of 37 students accepted with a GED certificate to a random group of 37 high school graduates attending Surrey Community College, North Carolina. (GED students were accepted with minimum total test scores of 225.) The mean GPA for high school graduates was higher than that of the GED group, 2.93 compared with 2.75 on a 4.00 system. Given the size of the sample, the difference was not statistically significant.

Wilson, Davis and Davis (1981) compared 27 GED students with 77 high school graduates enrolled in vocational courses at Lake City Community College, Florida in 1976-77. The GED students were more successful. Grade point averages were 2.80 for GED students

and 2.56 for high school graduates. Completion rates were 63% for GED students and 60% for high school graduates. 63% of the GED holders found employment in their program field compared to 56% for high school graduates. Again, however, the differences were not statistically significant. The authors concluded that GED students succeed as well as traditional graduates in postsecondary vocational programs.

In a study of Canadian students, Colert (1983) collected data on 26 GED students and 27 high school diploma students attending Brandon University in 1982-83. The mean grade point averages for the diploma students was higher than the mean for the GED holders (1.98 compared with 1.68, on a 4.00 system), and the mean for the ratio of credit hours passed was higher for the high school graduates (79%, compared with 60% for GED holders). However, given the sample size the differences were not statistically significant.

J.D. Ayers (1980) collected data on 91 prison inmates accepted into university programs conducted by the University of Victoria, Canada over the four-year period from 1974 to 1977. The students were accepted on the basis of GED scores (total minimum score of 225 except for students for whom English is a second language). Ayers found that a number of students with standard scores less than 225 completed university courses successfully, particularly if their mother tongue was not English. This was partly a function of remedial programs available to the students. There was considerable variability in grades obtained by students at all GED score levels. Addressing the issue of cut-off scores, Ayers observed:

> There is a marked trend for failure rates to increase with lower GED test scores. The percentage of failures reaches 50 per cent for those with standard scores below 48.4 [242] total but it should be noted that the

> overall failure rate for first year courses is only about 25 per cent and such failure rates are similar to those of many first year courses on campus, and less than for some such as English composition. (J.D. Ayers, 1980, p. 79)

Ayers recommended that postsecondary institutions determine cut-off points for admission of GED students based on the specific experience at their institution, recognizing that an open admissions policy may be appropriate where remedial English and study skills courses are available.

Wolf (1980) selected 100 GED holders from the pool of first semester students enrolled at South Plains College, a two-year college in Texas, from Fall, 1970 through Fall, 1973. (Fifty of the GED holders were in transfer programs and fifty in terminal degree programs.) He compared this sample to a representative sample of high school graduates and high school non-completers. No significant differences were found between the mean GPA's of 2.64 for high school graduates, 2.61 for GED holders, and 2.60 for high school non-completers. Wolf found a correlation coefficient of .35 (R^2 = .12) between mean GED score and first semester grades.

The GED Testing Service cited the Wolf (1980), Wilson et al (1981) and Colert (1983) studies in their report on "The Reliability and Validity of the GED Tests." (These three studies reviewed the academic records of 153 GED holders.)

> Although the GED testing program is not limited to examinees who wish to attend postsecondary education institutions, the GED examinee population contains many persons interested in attending training or educational programs. Once in these programs, the academic success of GED graduates (compared to that of traditional high school graduates) reflects the predictive validity of the GED Tests. A number of studies of college success of GED graduates have been

> completed. (See, for example, Wolf, 1980; Wilson, et al, 1981; Colert, 1983.) Although there are minor differences in the results of these studies, it can be generally concluded that GED graduates (as a group) succeed in college at about the same rate and to about the same degree as do traditional high school graduates. (Whitney, Malizio, Patience, 1985, p. 3)

Other reports in the University of Wisconsin Employment & Training Institute's series of research on high school equivalency certificates summarize the experience of 10,950 GED holders whose post-secondary education records were examined in Wisconsin.

V. RECENT NATIONAL SURVEYS OF GED HOLDERS AND EXAMINEES

Numerous surveys have been sent to GED holders and examinees. Regional and local surveys include: Sharon (1972), Swarm (1973). Nave (1974), Nelson (1975), Parker (1976), McClung (1977), C.V. Ayers (1980), Walker (1981), Moore (1982), Moraine Valley Community College (1982), Saskatchewan Continuing Education Department (1982b), Mize (1983), and McLawhorn (1983). In Wisconsin the Fox Valley Technical Institute (1985) surveyed GED holders and a survey of GED holders conducted by the Madison Area Technical College will be forthcoming in May, 1986.

The educational goals of GED candidates were explored in 1981 in a national survey of 12,600 persons who tested for the GED in Spring, 1980. In that survey conducted by the American Council on Educaton, 29% of the respondents indicated that they took the GED in order to meet educational requirements. 39% indicated that they wanted the GED to meet future or present job requirements. 25% said they took the GED for personal satisfaction, and 5% indicated that they needed the GED to enter the military. (Malizio, 1981)

In 1982 Cervero surveyed 458 persons from the 1980 test group. At that time, eighteen months after they took the GED tests, 73% of the GED candidates reported that they had expected that taking GED tests would help them be admitted to educational institutions. 51% found that the tests actually helped them receive admission to an educational institution.

Bethal (1983) in another follow-up of the 1980 GED candidates, surveyed 647 persons. She found that 56% of the sample had enrolled in school (16% in a community or junior college, 3% in a four-year college or university, 17% in a technical or trade school, 9% in OJT or apprenticeship programs, and 11% in other programs.) 44% of the sample had not continued their education.

VI. SURVEYS OF POST-SECONDARY INSTITUTIONS

In 1982 the American Council on Education reported on a survey of 3,300 postsecondary insitutions. 2,236 institutions (67% of the total) responded. 95% of the institutions reported that they admit applicants who have not graduated from an accredited secondary school, and 95% of these (or 90% of the total) admit GED holders or applicants who have met specified minimum scores on the GED Tests. About 51% of the institutions accepting GED holders also require them to submit additional information (e.g. SAT, ACT, or CLEP scores) to demonstrate academic readiness to undertake college-level work. About 15% of the institutions that accept GED holders require specified minimum scores higher than those required for passing the GED. (Spille, Memorandum #23, 1982)

The Saskatchewan Department of Continuing Education conducted a phone survey of 15 educational institutions in the Saskatchewan (Canada) province. 87% of the schools (N=13) accept the GED certificate in itself or as part of the criteria for entrance. Two schools, the Universities of Saskatchewan and Regina do not accept the GED in itself. Such applicants may enter through the Open Admission Policy at Regina or the Special Admission Policy (for persons aged 20 years or older) at Saskatchewan. (Saskatchewan Continuing Education Department, 1982)

Results of the University of Wisconsin Employment & Training Institute's surveys of admission policies regarding GED holders at all Wisconsin colleges and universities are summarized in Acceptance of GED Holders at Post-Secondary Institutions in Wisconsin, 1985. The specific admission policies toward GED holders in every associate degree, certificate and diploma program offered by the sixteen VTAE (Vocational, Technical and Adult Education) districts in Wisconsin are reported in Admission Requirements of the Wisconsin Vocational, Technical and Adult Education (VTAE) System as They Apply to the High School Equivalency Holder, 1985.

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